USW-88

UNIVERSAL 8X8 MATRIX SWITCH

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SAFETY INSTRUCTIONS AND COMPLIANCE DECLARATIONS

PLEASE OBSERVE THE FOLLOWING SAFETY PRECAUTIONS AS OUR PRODUCTS CONTAIN

CLASS I LASER PRODUCTS

WARNING

Do not disconnect the fiber optic connector while the unit is powered up. Exposure to laser radiation is possible when the laser fiber optic connector is disconnected while the unit is powered up.

Although the fiber optic connectors in this product emit only Class 1 energy that is below the levels considered to be hazardous, one should never stare directly into a fiber optic connector or an unconnected fiber end unless one can be certain that no exposure to laser energy could occur.

CAUTION

This manual is intended for use by trained service personnel. The use of controls, making adjustments, or performing operations other than those specified may result in hazardous radiation exposure.

The following label or equivalent is located on the surface of laser products. This label indicates that the product is classified as a CLASS 1 LASER PRODUCT.

Class 1 Laser Product
Complies with FDA performance
standards for laser products
except for deviations pursuant
to Laser Notice No. 50,
dated July 26, 2001

SURGE PROTECTION DEVICE RECOMMENDED

This product contains sensitive electrical components that may be damaged by electrical spikes, surges, electric shock, lightning strikes, etc. Use of surge protection systems is highly recommended in order to protect and extend the life of your equipment.

TABLE OF CONTENTS

1.0 PRODUCT DESCRIPTION 5
2.0 OPERATION CONTROLS AND FUNCTIONS 6
3.0 REMOTE CONTROL 9
3.1 IR CUSTOM CODE 10
3.2 DISCRETE IR CODES 10
3.3 IR RECEIVER 11
4.0 RS-232 PROTOCOL 12
4.1 PIN ASSIGNMENT 12
4.2 COMMANDS 13
5.0 VIDEO CONNECTION DIAGRAM 16
6.0 RACK INSTALLATION 17
7.0 SPECIFICATIONS 18
8.0 SERVICE PROCEDURE 20
8.1 REPLACEMENT POLICY 20
8.2 RETURN AND REPAIR SERVICE 20
9.0 LIMITED WARRANTY 21

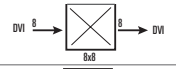
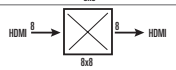
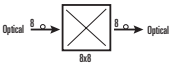
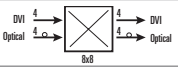
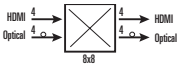
1.0 PRODUCT DESCRIPTION

The USW-88 Series is a high performance Universal Matrix Switcher System that provides 8x8 video switching for HDMI/DVI signals. Standard versions of the USW-88 support all optical switching, or hybrid optical/electrical switching for HDMI/DVI signals. When configured for optical switching, only one multimode fiber is required per input or output port. In addition, the distance between the switch and HDMI/DVI devices can be up to 400m when connected by fiber cable.

The USW-88 is a true HDMI 1.3 switch, supporting jitter-free, high-quality HDMI/DVI Display with 10-bit deep color digital video format and Dolby or DTS featured digital audio format. It comes with three types of switching control: manual control panel, PC based control software through standard RS-232/422, or remote IR control.

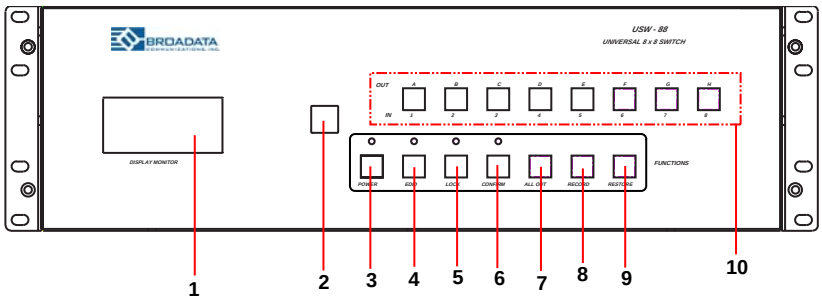
The USW-88 comes in a 3-RU packaging design.

The USW-88 has the following configurations:

Model	Description	I/O Configuration
USW-88DVI	8x8 Universal Switch, DVI	
USW-88HDMI	8x8 Universal Switch, HDMI	
USW-88FOP	8x8 Universal Switch, Optical	
USW-44D44F	8x8 Universal Switch, 4-DVI, 4-Optical	
USW-88HDMI	8x8 Universal Switch, 4-HDMI, 4-Optical	

2.0 OPERATION CONTROLS AND FUNCTIONS

Front Panel



1. Display monitor: This monitor displays switch settings information with each output and input selection.

2. IR sensor: For remote IR control.

3. POWER: Press this button to turn the system on. Once the system turns on the LED will turn Green and when entering Standby Mode it will turn Red.

4. EDID: There will be two selections shown on the Display Monitor: 1. TV mode and 2.Standard Mode, press the number key to first select the desired input and then press one or two to select the EDID mode. The LED will turn on when setting the EDID. After the selection is made, press CONFIRM key to confirm.

   TV Mode means the device will use display's EDID. The factory default setting is TV mode. When EDID is switched to a TV Mode, the USW-88 will first detect the output source's EDID from A-D and then record it in the USW-88 unit, regardless of the output sources from E-H. If the first detected output source is DVI it will pass on to the next source, until the first HDMI is detected. The detection priority is HDMI v1.3 > HDMI v1.2 > DVI. In order to ensure all output is displayable output from E-H must be of a lower standard than output from A-D.

Standard Mode means the device will use internal built-in EDID. When EDID is on Standard Mode, the USW-88 will use the built-in EDID. In this case, Video Supports is less than 1080p, 10 bits (max), and Audio Supports is PCM2.

5. LOCK: Press this button to lock all the functions and press it again to release the lock. When LED turns green, the lock is activated and when it turns red the key lock has been released.

6. CONFIRM: Press this button after each and every selection to confirm the setting. If this button is not pressed after 20 seconds, the selection will be cancelled.

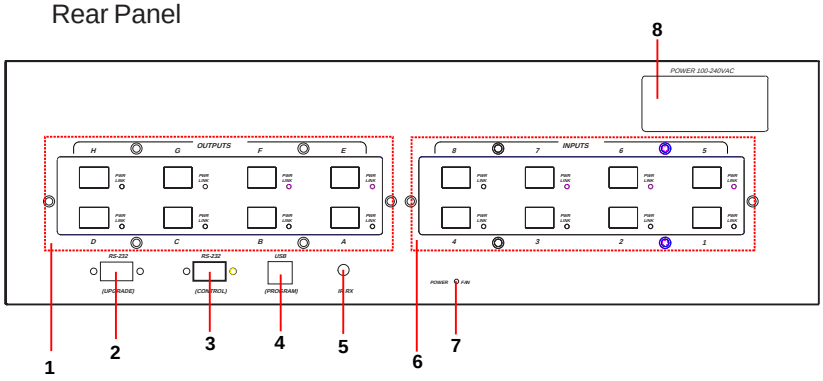
7. ALL OUT: Press this button to set all the outputs to display with the same input. After pressing the ALL OUT button, press an input number and then press CONFIRM to confirm the selection.

8. RECORD: Press this button to choose your six pre-set settings. First press the setting number, and when all the input/outputs are being set, be sure to press RECORD to record it into the system. The factory default settings are 1.12345678, 2.87654321, 3.11223344, 4.55667788, 5.11221122, 6.33443344.

9. RESTORE: Select this button in order to restore your six pre-set settings, then press CONFIRM key to confirm your selection.

10. OUT A~H & IN 1~8: Press the output source selection button in order to choose which input port corresponds to the desired output port. First select your output port from A-H, wait 2 seconds, then choose the desired input port from ports 1-8, pressing CONFIRM key will confirm your setting. Each output selection only allows a single input setting each time.

Rear Panel



1. OUTPUT A~H: These slots are where you connect the video display through HDMI, DVI or Optical connections.

2. RS-232 (UPGRADE): This slot is where you connect a D-sub 9 male pin connector cable to your host, in order to upgrade your firmware.

3. RS-232 (CONTROL): This slot is where you connect a D-sub 9 female pin connector cable to your host so you can control USW-88 switch settings.

4. USB (PROGRAM): This slot is where you connect a USB b -type connector cable to your host for System Program firmware downloading.

5. IR RX: This slot is where you can extend your IR receiver with an IR extender cable that accepts only 38KHz.

6. INPUT 1~8: These slots are where you connect the video sources through HDMI, DVI or Optical connections.

7. POWER: This LED will turn GREEN when power is on.

8. Power 95-240 VAC: This is the AC power entry and switch.

3.0 REMOTE CONTROL

Section 3.1 shows the IR code for the remote control. There are a total of four dipswitches located at the rear bottom of the remote control. When dipswitches are all set to ON (upper position), the remote control is able to control all the outputs and inputs. For example, when output A wishes to select input 5, first press 1, wait a second, then press 5, and instantly output display A will show input source 5's image.

For other settings please refer to Section 3.2. For example, when all the dipswitches are set to OFF, this setting is for output A, so it can only control input selections. When output A wishes to select input 3, pressing 3 will allow output display A to only show input source 3's content. For additional settings please refer to Section 3.2.

3.1 IR Custom Code

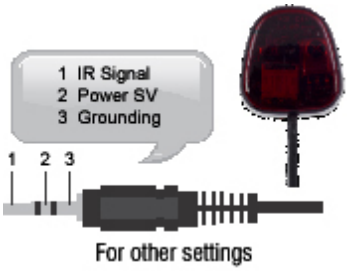
No.	DATA
1	88
2	89
3	8A
4	8C
5	8D
6	8E
7	90
8	91
9	92
0	95

3.2 Discrete IR Codes

Select / Dipswitch	Input 1	Input 2	Input 3	Input 4	Input 5	Input 6	Input 7	Input 8
Output A	0cx88	0x89	0x8A	0x8C	0x8D	0x8E	0x90	0x91
Output B	0cx88	0x89	0x8A	0x8C	0x8D	0x8E	0x90	0x91
Output C	0cx88	0x89	0x8A	0x8C	0x8D	0x8E	0x90	0x91
Output D	0cx88	0x89	0x8A	0x8C	0x8D	0x8E	0x90	0x91
Output E	0cx88	0x89	0x8A	0x8C	0x8D	0x8E	0x90	0x91
Output F	0cx88	0x89	0x8A	0x8C	0x8D	0x8E	0x90	0x91
Output G	0cx88	0x89	0x8A	0x8C	0x8D	0x8E	0x90	0x91
Output H	0cx88	0x89	0x8A	0x8C	0x8D	0x8E	0x90	0x91

3.3 IR Receiver

The USW-88 also comes with a IR extension receiver (see figure below). Use this receiver, one can remote control the USW-88 at a designated field of view.



4.0 RS-232 PROTOCOL

4.1 Pin Assignment

USW-88			Remote Control Console	
PIN	**Assignment**		**PIN**	**Assignment**
1	NC		1	NC
2	Tx		2	Rx
3	Rx		3	Tx
4	NC		4	NC
5	GND		5	GND
6	NC		6	NC
7	NC		7	NC
8	NC		8	NC
9	NC		9	NC

Baud Rate: 9600 bps
Data Bit: 8 bits
Parity: None
Flow Control: None

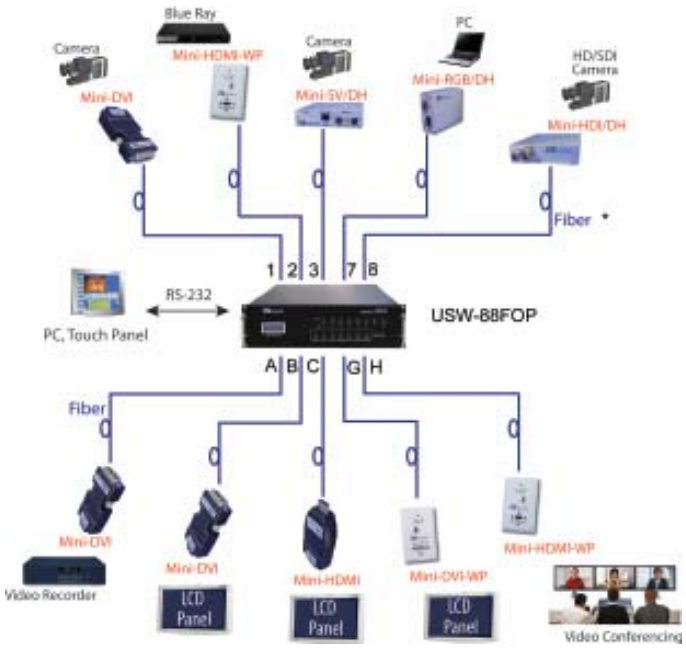
4.2 Commands

COMMAND	ACTION
POWER 00	Power Off (standby)
POWER 01	Power On
PORT 11	Output A select Input 1
PORT 12	Output A select Input 2
PORT 13	Output A select Input 3
PORT 14	Output A select Input 4
PORT 15	Output A select Input 5
PORT 16	Output A select Input 6
PORT 17	Output A select Input 7
PORT 18	Output A select Input 8
PORT 21	Output B select Input 1
PORT 22	Output B select Input 2
PORT 23	Output B select Input 3
PORT 24	Output B select Input 4
PORT 25	Output B select Input 5
PORT 26	Output B select Input 6
PORT 27	Output B select Input 7
PORT 28	Output B select Input 8
PORT 31	Output C select Input 1
PORT 32	Output C select Input 2
PORT 33	Output C select Input 4
PORT 35	Output C select Input 5
PORT 36	Output C select Input 6
PORT 37	Output C select Input 7
PORT 38	Output C select Input 8
PORT 41	Output D select Input 1
PORT 42	Output D select Input 2
PORT 43	Output D select Input 3
PORT 44	Output D select Input 4

COMMAND	ACTION
PORT 45	Output D select Input 5
PORT 46	Output D select Input 6
PORT 47	Output D select Input 7
PORT 48	Output D select Input 8
PORT 51	Output E select Input 1
PORT 52	Output E select Input 2
PORT 53	Output E select Input 3
PORT 54	Output E select Input 4
PORT 55	Output E select Input 5
PORT 56	Output E select Input 6
PORT 57	Output E select Input 7
PORT 58	Output E select Input 8
PORT 61	Output F select Input 1
PORT 62	Output F select Input 2
PORT 63	Output F select Input 3
PORT 64	Output F select Input 4
PORT 65	Output F select Input 5
PORT 66	Output F select Input 6
PORT 67	Output F select Input 7
PORT 68	Output F select Input 8
PORT 71	Output G select Input 1
PORT 72	Output G select Input 2
PORT 73	Output G select Input 3
PORT 74	Output G select Input 4
PORT 75	Output G select Input 5
PORT 76	Output G select Input 6
PORT 77	Output G select Input 7
PORT 78	Output G select Input 8
PORT 81	Output H select Input 1
PORT 82	Output H select Input 2
PORT 83	Output H select Input 3
PORT 84	Output H select Input 4

COMMAND	ACTION
PORT 85	Output H select Input 5
PORT 86	Output H select Input 6
PORT 87	Output H select Input 7
PORT 88	Output H select Input 8

5.0 VIDEO CONNECTION DIAGRAM



*Can be replaced by DVI or HDMI cable when non-optical port version of the USW-88 is used.

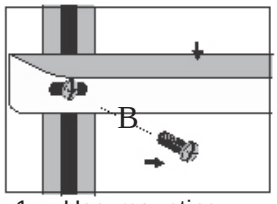
6.0 RACK INSTALLATION

Use the following diagram to install USW-88 in a rack chassis.

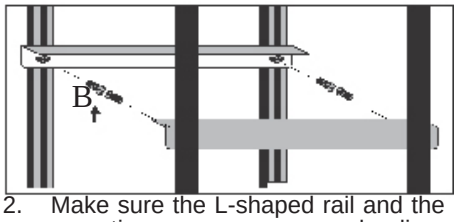
A L-Shaped rail x 2

B Mounting screws x 4

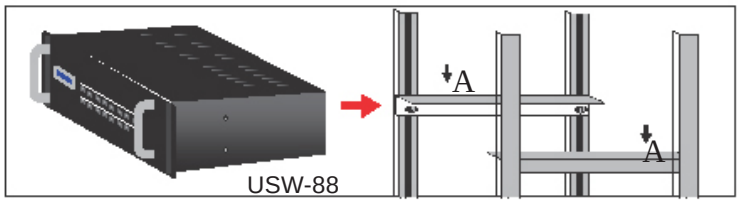
C L-Shaped rail x 2



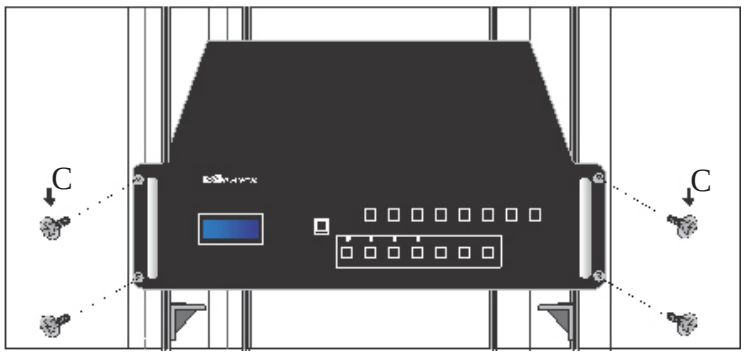
1. Use mounting screws to attach the L-shape rail to the frame



2. Make sure the L-shaped rail and the mounting screws are properly aligned, with two screws per L-shaped rail



3. Slide the device on top of the L-shaped rails.



7.0 SPECIFICATIONS

Matrix Switch

Array Size	8 x 8
EDID Control	Independent

HDMI/DVI Ports

Resolution	Up to 1080p@60Hz or 1920x1200@60Hz
Connector	DVI or HDMI Female Plugs
Protocol	EDID, DDC, and HDCP Capable

Fiber Ports

Fiber Type	Multimode
Connector	SC
Protocol	EDID, DDC, and HDCP Capable

Control

Manual	Panel Button
RS-232	DB-9, 9600 bit/sec
IR	20-60 KHz

Physical

Dimension (H x W x D)	5.2" x 17.3" x 14.0"
Power Level	95-240 VAC @ 260W
Operating Temperature	0 to +50°C
Humidity	0 to 95% RH, non-condensing

8.0 SERVICE PROCEDURE

8.1 Replacement Policy

Standard products found defective on arrival (DOA) will be replaced, based on availability, within 24 to 48 hours anywhere in the U.S. Please call Customer Service at **800-214-0222** for information.

8.2 Return/Repair Service

The USW-88 System contains no user serviceable components. If you have a problem with your unit, please contact the Customer Service Department. To facilitate our return/repair processing please contact Broadata Communications, Inc. to obtain a Return Material Authorization (RMA). Please include the following information:

- Product model number
- Serial Number
- Complete description of problem
- Hardware installation description

Broadata Communications, Inc.
2545 West 237th Street, Suite K
Torrance, CA 90505
1-800-214-0222
(310) 530-1416
(310) 530-5958 (Facsimile)
e-mail: CustomerService@Broadatacom.com
Website: www.broadatacom.com

9.0 LIMITED WARRANTY

Broadata Communications, Inc. (BCI) warrants, for a period of one year from date of shipment, each product sold shall be free from defects in material and workmanship. BCI will correct, either by repair, or at BCI's election, by replacement, any said products that in our sole discretion prove to be defective and are returned to the manufacturing location within 30 days after such defect is ascertained. All warranties are limited to defects arising under normal use and do not include malfunctions or failure resulting from misuse, abuse, neglect, alterations, electrical power problems, usage not in accordance with product instructions, improper installation, or damage determined by BCI to have been caused by the Buyer or repair made by a third party. Limited warranties granted on products are to the initial customer end-user and are not transferable. OUR LIABILITY UNDER THIS WARRANTY SHALL IN ANY CASE BE LIMITED TO THE INVOICE VALUE OF THE PRODUCT SOLD AND BCI SHALL NOT BE LIABLE TO ANYONE FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES ARISING FROM THE USE OF ITS PRODUCTS OR THE SALE THEREOF. We make NO WARRANTY AS TO THE MERCHANTABILITY OF ANY GOODS, OR THAT THEY ARE FIT FOR ANY PARTICULAR PURPOSE OR END APPLICATION NOR DO WE MAKE ANY WARRANTY, EXPRESSED OR IMPLIED OTHER THAN AS STATED ABOVE.

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